

28. (Amended) [The method according to claim 18, the method further comprising the step of:] A method for transmitting data within a module, the method comprising the steps of:
transmitting the data between cells of a module having a multi-dimensional cell architecture with synchronization via a plurality of bus segments; and
controlling a setup of the plurality of bus segments via a plurality of lookup tables, the plurality of lookup tables storing connection data,
wherein the plurality of bus segments are connectable in a plurality of configurations, and
wherein a first lookup table of the plurality of lookup tables is referenced for an entry of a following second lookup table of the plurality of lookup tables.

REMARKS

I. INTRODUCTION

No new matter has been added. Reconsideration of the present application is requested. With respect to the claim misnumbering mentioned in the Office Action, Applicants assume that the Examiner is referring to claims 22 and 23, which until this amendment still depended from canceled claim 19. By changing this dependency to claim 18, Applicants submit that this issue has been addressed.

II. ALLOWABLE CLAIMS

Applicants gratefully acknowledge the Examiner's indication that claims 7-14, 17, and 43-47 have been allowed.

Applicants gratefully acknowledge the Examiner's indication that claim 28 would be allowable if rewritten in independent form. Claim 28 has been rewritten in independent form. Claims 28 is now in condition for allowance.

III. REJECTION OF CLAIMS 1-6, 15, 16, 18, 22-25 AND 27-42 UNDER 35 U.S.C. § 103 OVER THE TRIMBERGER PATENT IN VIEW OF "THE PROGRAMMABLE LOGIC DATA BOOK"

Claims 1-6, 15, 16, 18, 22-25, 27, and 29-42 stand rejected under 35 U.S.C. § 103 in light of U.S. Patent No. 5,892,961 (the "Trimberger patent") in view of "The Programmable Logic Data Book" by Xilinx 1994.

It is respectfully submitted that neither the Trimberger patent, nor "The Programmable Logic Data Book", alone or combined, renders obvious the subject matter of any of claims 1-6, 15, 16, 18, 22-25, 27, and 29-42, for at least the following reasons.

Claim 1

Claim 1 recites a plurality of electrically independent bus segments and a plurality of nodes separating the bus segments. The nodes actively connect and disconnect at least two of the plurality of bus segments.

Applicants interpret the Examiner's argument that the "plurality of nodes" recited in claim 1 corresponds to element 12 of figure 2 as meaning that the Examiner regards the intersections or "interconnect points" of the Trimberger patent's "interconnect structure" as "nodes". Claim 1 further recites "a respective routing table" included in each node that is part of the claimed bus system. The Trimberger Patent's "lookup table" is found in the Trimberger Patent's CLBs, not in Trimberger's interconnect structure. See Trimberger Patent, col. 1, ll. 46-53. The Trimberger Patent's CLBs are not part of a bus system, but rather are merely things interconnected by the Trimberger Patent's "interconnect structure." Hence, the "lookup table" found in the Trimberger Patent's CLB cannot be "a respective routing table" included in each node.

Moreover, even if the Trimberger Patent's CLBs were somehow construed as "nodes" and somehow combined with the buses found in "The Programmable Logic Data Book", the Trimberger Patent's CLBs do not actively connect and disconnect "at least two of the plurality of bus segments". The Trimberger Patent's CLBs are connected by the Trimberger Patent's interconnect structure, not part of the interconnection. Thus, the Trimberger Patent's CLBs do not provide the recited "connecting and disconnecting" recited in claim 1.

Furthermore, claim 1 recites "a respective monitoring unit independently verifying whether a connection can be set up within the unit", this respective monitoring unit being included in each of the nodes. The Trimberger Patent, alone

or in combination with "The Programmable Logic Data Book", neither teaches nor suggests a monitoring unit included in each node. Applicants respectfully note that the portion of the Trimberger Patent cited by the Examiner, namely, col. 1, ll. 53-63, appears to describe no monitoring function whatsoever.

For at least these reasons, Applicants respectfully submit that claim 1 is patentable over the Trimberger Patent and "The Programmable Logic Data Book".

Claim 2

Claim 2 depends from claim 1, and thus is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 1.

Claim 3

Claim 3 depends from claim 1, and thus is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 1.

Moreover, claim 3 recites "a plurality of CPUs" in the unit. Applicants submit that the Trimberger Patent's CLB is not a CPU. The CLB in The Trimberger Patent is defined as a "register", see Trimberger Patent, col. 2, ll. 56, or as a subset of an array of memory cells. See Trimberger Patent, col. 3, ll. 28-30. A mere register or array of memory cells is not a CPU.

Furthermore, the Trimberger Patent's Figure 2, clearly shows the Trimberger Patent's single CPU as a separate structure that is not part of a multi-dimensional arrangement. Therefore, the Trimberger Patent does not teach "a plurality of CPUs in a multi-dimensional arrangement".

Claim 4

Claim 4 depends from claim 1, and thus is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 1.

Moreover, claim 4 recites "a plurality of arithmetic logic units in a multi-dimensional arrangement". The Examiner argues that the Trimberger Patent Figure 5 teaches this claim limitation. However, Figure 5 of the Trimberger Patent is part of the Trimberger Patent's CPU, not the Trimberger Patent's CLB. See Trimberger Patent, col 5., ll. 63-64 (Trimberger's Figure 4 is an overview of the CPU), col. 6, ll. 29-31 (Trimberger's Figure 5 is a detailed circuit block diagram of length data path logic in the Trimberger's CPU, not in the CLB). As mentioned previously for claim 3, the Trimberger Patent's CPU is not part of the multi-dimensional structure, but is merely a single controller outside of the Trimberger Patent's multi-dimensional structure. See, e.g., Trimberger Patent, Figure 2. Therefore, The Trimberger Patent, alone or in combination with "The Programmable Logic Data Book" does not teach or suggest claim 4.

Claim 5 & 6

Claims 5 and 6 depend from claim 2, and indirectly from claim 1, and thus is patentable over the Trimberger Patent and "the Programmable Logic Data Book" for at least all the reasons given above for claims 1 and 2.

Claim 15

Claim 15 depends from claim 1, and thus is Patentable over the Trimberger Patent and the "Programmable Logic Data Book" for at least all the reasons given above for claim 1.

Claim 16

Claim 16 depends from claim 1, and thus is patentable over the Trimberger Patent and the "Programmable Logic Data Book" for at least all the reasons given above for claim 1.

Moreover, claim 16 recites "a feedback signal from each one of the plurality of nodes". The Trimberger Patent, alone or in combination with "The Programmable Logic Data Book", neither teaches nor suggests such a feedback signal.

Claim 18

The Examiner argues that the combination of the Trimberger Patent and "The Programmable Logic Data Book" renders claim 18 obvious.

Claim 18 recites "transmitting the data between cells of a module". The cited portion of the Trimberger Patent discusses transmitting data from the Trimberger Patent's CPU to a row of memory. See Trimberger Patent, Figure 3 and col. 5, ll. 3-14. As discussed previously, the Trimberger Patent's CPU is not a cell in a multidimensional cell architecture. See, e.g., Trimberger Patent, Figure 2. Thus a transmission of data from the CPU to the cells of the module, cannot satisfy the recited limitation of claim 18, which recites data transmitted between cells.

Furthermore, the Trimberger Patent, alone or in combination with "The Programmable Logic Data Book" provides no teaching or suggestion of transmitting data between cells "with synchronization", as recited in claim 18. The Trimberger Patent includes no discussion of synchronization.

For at least these reasons, claim 18 is patentable over the Trimberger Patent and "The Programmable Logic data Book".

Claim 22 & 23

Claims 22 and 23 have been amended to depend from claim 18. Claims 22 and 23 thus are patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 18.

Claim 24

Claim 24 depends from claim 18. Thus, Claim 24 is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 18.

Claim 25 & 27

Claims 25 and 27 both depend from claim 18. Thus, these claims are patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 18.

Moreover, with respect to claims 25 and 27, the Examiner argues the Trimberger Patent teaches a plurality of bus segments that are switched by a plurality of registers. However, Figure 4, to which the Examiner refers, is a circuit diagram for Trimberger Patent's CPU, not the CLBs shown in Figure 1. See Trimberger Patent, col. 5, l. 63 (Figure 4 is the Trimberger Patent's CPU 40). As is clear from Trimberger Patent's Figure 2, the Trimberger Patent's CPU is NOT part of a bus system, but is instead a separate structure.

Applicants respectfully submit that the Trimberger Patent, either alone or in combination with "The Programmable Logic Data Book", neither teaches nor suggests a bus system where bus segments are switched by registers.

Claim 29

Claims 29 depends from claim 18. Thus, claim 29 is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 18.

Claim 30

Claim 30 depends from claim 29. Thus, claim 30 is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 29.

Moreover, claim 30 recites "changing the first direction only if an axis of the target is reached". Neither cited reference has any discussion of changing directions based on an axis. Thus, this claim limitation is not taught by the Trimberger Patent, alone or in combination with "The Programmable Logic Data Book".

Furthermore, the functions that the cited portions of the Trimberger Patent do describe occur in the CPU, and not in the multi-dimensional array, of which Trimberger Patent's CPU is not part. There is no teaching or suggestion of bus segments in the Trimberger Patent, and even if this structure were somehow imported from "the Programmable Logic Data Book" there is no teaching or suggestion of setting bus segments that are used to transmit data between cells of a module having a multi-dimensional cell architecture.

Claim 31

Claims 31 depends from claim 29. Thus, claim 31 is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 29.

Moreover, claim 31 recites "changing the first direction if a blockage is encountered". The Trimberger Patent, alone or in combination with "The Programmable Logic Data book", neither teaches nor suggests blockages, or methods for dealing with a blockage if one is encountered.

Claim 32 and 33

Claims 32 and 33 depend from claim 29. Thus, claims 32 and 33 are patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 29.

Moreover, claim 32 recites "setting up the plurality of bus segments in a first direction, ...wherein none of the plurality of bus segments are set up beyond an axis of the target". Claim 33 recites using a predetermined limit to determine whether a second bus segment beyond an axis of the target is set up. The Trimberger Patent, alone or in combination with "The Programmable Logic Data book", neither teaches nor suggests any sort of axis limitation on setting up a plurality of bus segments. Thus, claims 32 and 33 are patentable over the Trimberger Patent and "The Programmable Logic Data book".

Claim 34

Claim 34 depends from claim 18. Thus, claim 34 is patentable over Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 18.

Claim 35

Claim 35 depends from claim 18. Thus, claim 35 is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 18.

Moreover, claim 35 recites that a set of requests for a single node is "arbitrated". The Trimberger Patent, alone or in combination with "The Programmable Logic Data Book", neither teaches nor suggests arbitrated requests. Thus, Applicants respectfully submit that claim 35 is patentable over the Trimberger Patent and "The Programmable Logic Data Book".

Claim 36

Claim 36 depends from claim 18. Thus, claim 36 is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 18.

Moreover, claim 36 recites that a set of requests for a single node are "simultaneously processed" by the single node. The Trimberger Patent, alone or in combination with "The Programmable Logic Data Book", neither teaches nor suggests simultaneous processing of multiple requests by a single node. Thus, Applicants respectfully submit that claim 36 is patentable over Trimberger Patent and "The Programmable Logic Data Book".

Claims 37-40

Claim 37 depends from claim 18. Claims 38-40 depend from claim 37. Thus, claims 37-40 are patentable over Trimberger

Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 18.

Moreover, claim 37 recites "providing a first acknowledgment from the second node". Claims 38-40 also recite "providing a second acknowledgment from the third node". The Trimberger Patent, alone or in combination with "The Programmable Logic Data Book", neither teaches nor suggests any acknowledgment from a node. Acknowledgments are not discussed at all in the Trimberger patent or "The Programmable Logic Data Book". Thus, Applicants respectfully submit that claims 37-40 are patentable over Trimberger Patent and "The Programmable Logic Data Book".

Claim 41

Claim 41 depends from claim 18. Thus, claim 41 is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 18.

Moreover, claim 41 recites "disconnecting" a connection as a function of an interrupt signal. The Trimberger Patent, alone or in combination with "The Programmable Logic Data Book", neither teaches nor suggests disconnecting a connection as a function of an interrupt signal. Interrupts are not discussed at all in the Trimberger Patent or "The Programmable Logic Data Book." Applicants respectfully submit that claim 41 is patentable over the Trimberger Patent and "The Programmable Logic Data Book".

Claim 42

Claims 42 depends from claim 41. Thus, claim 42 is patentable over the Trimberger Patent and "The Programmable Logic Data Book" for at least all the reasons given above for claim 41.

Moreover, claim 42 recites "generating" an interrupt signal "when a predefined condition is satisfied". The Trimberger Patent, alone or in combination with "The Programmable Logic Data Book", neither teaches nor suggests generating an interrupt signal when a predefined condition is

satisfied. Interrupts are not discussed at all in the Trimberger patent or "The Programmable Logic Data Book." Thus, Applicants respectfully submit that claim 42 is patentable over the Trimberger Patent and "The Programmable Logic Data Book".

In view of at least the foregoing, it is respectfully submitted that neither the Trimberger Patent, nor the "The Programmable Logic Data Book", alone or combined, renders obvious the subject matter of any of claims 1-6, 15, 16, 18, 22-25, 27, and 29-42. Withdrawal of the rejection under 35 U.S.C. § 103 is, therefore, requested.

IV. CONCLUSION

In view of the foregoing, it is submitted that all of the pending claims are in condition for allowance.

Respectfully submitted,

KENYON & KENYON

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By: D. Magist
Dervis Magistre
Reg. No. 41,172

One Broadway
New York, NY 10004
(212) 425-7200